

**What is claimed is:**

- [Claim 1] 1. An input detection device, comprising:  
a button set circuit comprising a plurality of buttons utilized for inputting commands, each button outputting a unique voltage level when the button is activated;  
a voltage generating circuit capable of outputting a plurality of generated voltage levels corresponding to the unique voltage levels outputted by each of the buttons in the button set circuit;  
a plurality of input/output (I/O pins) for specifying which generated voltage level is output by the voltage generating circuit;  
a comparator for comparing each of the generated voltage levels outputted from the voltage generating circuit with the voltage outputted from the button set circuit; and  
a control circuit for controlling the voltage generating circuit with the plurality of I/O pins to alternately output each of the generated voltage levels, for recording the generated voltage level that is approximately equal to the voltage outputted from the button set circuit, and for determining which button in the button set circuit was activated based on the recorded generated voltage level.
- [Claim 2] 2. The input detection device of claim 1 wherein the control circuit records the highest generated voltage level that is lower than the voltage outputted from the button set circuit.
- [Claim 3] 3. The input detection device of claim 1 wherein the control circuit records the lowest generated voltage level that is higher than the voltage outputted from the button set circuit.
- [Claim 4] 4. The input detection device of claim 1 wherein the I/O pins are general purpose I/O (GPIO) pins.

**[Claim 5]** 5. The input detection device of claim 1 wherein the unique voltage level associated with each button is greater than the unique voltage level associated with a preceding button by a factor of two and is less than the unique voltage level associated with a succeeding button by a factor of two.

**[Claim 6]** 6. The input detection device of claim 1 wherein when two or three buttons are pressed simultaneously, the input detection device determines that the button having a highest priority was activated.

**[Claim 7]** 7. The input detection device of claim 6 wherein the button outputting the largest unique voltage level has the highest priority.

**[Claim 8]** 8. The input detection device of claim 1 wherein  $n+1$  I/O pins are capable of detecting which button of up to  $2^n$  buttons was activated,  $n$  being a positive integer.

**[Claim 9]** 9. A method of detecting input commands, comprising:  
providing a button set circuit comprising a plurality of buttons utilized for inputting commands, each button outputting a unique voltage level when the button is activated;  
activating at least one button in the button set circuit, thereby outputting a voltage from the button set circuit;  
outputting a plurality of generated voltage levels corresponding to the unique voltage levels outputted by each of the buttons in the button set circuit;  
comparing each of the generated voltage levels with the voltage outputted from the button set circuit;  
alternately outputting each of the generated voltage levels;  
recording the generated voltage level that is approximately equal to the voltage outputted from the button set circuit; and

determining which button in the button set circuit was activated based on the recorded generated voltage level.

[Claim 10] 10. The method of claim 9 wherein recording the generated voltage level that is approximately equal to the voltage outputted from the button set circuit comprises recording the highest generated voltage level that is lower than the voltage outputted from the button set circuit.

[Claim 11] 11. The method of claim 9 wherein recording the generated voltage level that is approximately equal to the voltage outputted from the button set circuit comprises recording the lowest generated voltage level that is higher than the voltage outputted from the button set circuit.

[Claim 12] 12. The method of claim 9 wherein the unique voltage level associated with each button is greater than the unique voltage level associated with a preceding button by a factor of two and is less than the unique voltage level associated with a succeeding button by a factor of two.

[Claim 13] 13. The method of claim 9 wherein when two or three buttons are pressed simultaneously, determining that the button having a highest priority was activated.

[Claim 14] 14. The method of claim 13 wherein the button outputting the largest unique voltage level has the highest priority.